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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/642,532	08/18/2000	Chris Heegard	ALA-108	7791

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EXAMINER

AHN, SAM K

ART UNIT PAPER NUMBER

2634

DATE MAILED: 04/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/642,532

Applicant(s)

HEEGARD ET AL.

Examiner

Sam K. Ahn

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15-20 is/are allowed.
- 6) ☒ Claim(s) 1,2,7-14,21-26 and 28-32 is/are rejected.
- 7) ☒ Claim(s) 3-6 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 August 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the multiplexer multiplexing error signal with adaptation-disabling value, as recited in claim 28, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The abstract of the disclosure is objected to because it exceeds 150 words.

Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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3. Claims 1, 7-14, 21-25 and 28-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Yanagi et al. (Yanagi).

Regarding claims 1, 10, 21 and 29, AAPA teaches an apparatus and a method for updating an adaptive element of a communication system wherein the apparatus (see Fig.1) comprises a quantizer or estimation circuit (120), an error calculator (160) and an adaptation controller (140), which are equivalent to the preferred embodiment of this instant application as illustrated in Fig.2. However, AAPA does not teach the adaptation controller updating the adaptive element based on the decision quality indicator dependent value. AAPA further does not teach a decision quality estimator for computing one or more decision quality indicators of estimates and generating a decision quality indicator dependent value.

Yanagi teaches a system comprising an adaptive element (12 in Fig.2) wherein the coefficients of the adaptive element are being updated by the error signal control circuit (20), which is further shown in Fig.4. Yanagi teaches the adaptation controller (27 in Fig.4) for controlling the updating of the adaptive element based on the decision quality indicator dependent value or first detected level signal, which is generated by the decision quality estimator (26 in Fig.4). Yanagi explains (note col.4, lines 15-58) that the error signal control circuit delivers the error signal to the adaptive element only when the signal value is above a threshold level, and further explains that when the signal received is

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extremely small, the error signal becomes large, which is inaccurate. And describes (note col.1, lines 40-54) that during this situation the reliability is degraded. One skilled in the art would analyze that Yanagi teaches the decision quality estimator (26 in Fig.4) computing decision quality indicator of estimates (from 13). Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify AAPA's teaching by including Yanagi's teaching of the decision quality estimator receiving the estimates for the purpose of increasing reliability of the error signal generated and properly update the adaptive element during situations where the received signal is small and prevent inaccurate updating of the adaptive element, as taught by Yanagi.

Regarding claims 7 and 28, AAPA in view of Yanagi teach all subject matter claimed, as applied to claim 1 or 21. Yanagi further teaches the adaptation controller receiving an error signal and a first detected level signal (note col.5, line 51) or adaptation-disabling value. And although Yanagi does not explicitly teach a multiplexer, it would have been obvious to one skilled in the art at the time of the invention to include the multiplexer as there are two inputs with one output going to the adaptive element where the use of the multiplexer is well-known in the art.

Regarding claim 8, AAPA in view of Yanagi teach all subject matter claimed, as applied to claim 1. And in regards to the further limitation of the adaptation-

disabling value being zero is commonly practiced in the art to assign values of high or low, or zero or having certain level. Therefore, it would have been a matter of design choice to assign the adaptation-disabling value to be a zero value as it is well-known and commonly practiced in the art.

Regarding claim 9, AAPA in view of Yanagi teach all subject matter claimed, as applied to claim 1. Yanagi further teaches adaptation controller (27) receiving first detected level signal or decision quality indicator dependent value (from 26) to determine if the update to the adaptive element should be supplied or not depending on the comparison to the predetermined threshold level. (note col.5, lines 44-65)

Regarding claims 11-14, 22-25 and 30-32, AAPA in view of Yanagi teach all subject matter claimed, as applied to claim 10, 21 or 29. AAPA already discloses the adaptive element (100) being updated depending on the error. Further limitation of the adaptive element being an adaptive equalizer, carrier recovery circuit, timing recovery circuit and automatic gain control circuit all requires an adaptive element, such as taught by AAPA in view of Yanagi, and therefore, it would have been obvious to one skilled in the art at the time of the invention to implement the teaching in any system for the purpose of taking advantage of the benefits it offers to the system being applied to, as explained earlier, for the purpose of increasing reliability of the error signal generated and properly update

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the adaptive element during situations where the received signal is small and prevent inaccurate updating of the adaptive element, as taught by Yanagi.

4. Claims 2 and 26 rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Yanagi et al. (Yanagi) and Heppe.

Regarding claims 2 and 26, AAPA in view of Yanagi teach all subject matter claimed, as applied to claim 1 or 21. Yanagi teaches decision quality estimator (26 in Fig.4) computing decision quality estimates (from 13). And although Yanagi does not explicitly teach the decision quality estimator comprises a syndrome calculator, and the decision quality indicator is a syndrome, Heppe teaches this limitation. Heppe teaches, in the same field of endeavor, syndromes or error indicators wherein the syndromes would have values depending on occurrence of errors. (note col.1, lines 52-60) Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify AAPA in view of Yanagi's teaching and implementing Heppe's teaching of syndrome calculation when receiving errors from error generation calculation circuit, if not already implemented in Yanagi's teaching may only be referred differently, for the purpose of effectively calculating errors in the signal received and improve reliability in updating the adaptive element.

Allowable Subject Matter

5. Claims 15-20 are allowed.

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6. Claims 3-6 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. The following is a statement of reasons for the indication of allowable subject matter: Present application discloses selective updating of adaptive element wherein the system comprises an adaptive element, quantizer, error calculation, update algorithm and decision quality estimator. Closest prior arts, AAPA and Yanagi teach all subject matter claimed. However, prior arts do not teach wherein the decision quality estimator comprises a window formed by shift registers coupled to an inclusive NOR gate, which sends a signal to the adaptive element when one of the indicator contains a different value, which indicates an error in the transmission resulting in disabling of the updating operation in the adaptive element. Yanagi teaches wherein the window, also formed by shift registers coupled to an adder, adds the registers and compares to a threshold to determine when updating operation should be disabled. Therefore, prior arts do not teach all the subject matter claimed.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ido teaches a system comprising adaptive element being updated by the error signal.

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Sawada et al. teach decision feedback equalizer computing errors through syndromes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Sam Ahn** whose telephone number is **(703) 305-0754**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Stephen Chin**, can be reached at **(703) 305-4714**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

P.O. Box 1450

Alexandria, VA 22313-1450

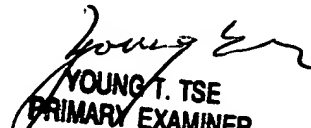
or faxed to:

(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Sam K. Ahn
4/22/04


YOUNG T. TSE
PRIMARY EXAMINER